CIA/PB 131632-3

FEBRUARY 28 1958

UNCLASSIFIED- SOVIET BLOC INTERNATIONAL GEOPHYSICAL YEAR INFORMATION

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PB 131632-3

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February 28, 1958

U. S. DEPARTMENT OF COMMERCE
Office of Technical Services
Washington 25, D. C.

Published Weekly from February 14, 1958 to January 2, 1959.
Subscription Price $10.00 for the Series.

PLEASE NOTE

This report presents unevaluated information on Soviet Bloc International Geophysical Year activities selected from foreign-language publications as indicated in parentheses. It is published as an aid to United States Government research.

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I. GENERAL

New Soviet Publications of IGY Significance

Mezhdunarodnyy geofizicheskiy god i issledovaniye verkhnikh sloyev atmosfery (International Geophysical Year and Investigation of the Upper Layers of the Atmosphere), by N. P. Ben'kova, published by the State Publishing House for Literature on Communications and Radio Problems, to be released in 7,000 copies the first quarter of 1958 is a brochure describing the IGY program on the study of phenomena connected with processes in the troposphere, in the Earth's crust, in the upper layers of the atmosphere, radio investigation of the ionosphere, study of geomagnetic variations aurora polaris, night glow, and meteors. (Sovetskiye Knigi, No 166, 1957, p 16)

Vizual'nyye nablyudeniye iskusstvennykh sputnikov Zemli (Visual Observations of Artificial Earth Satellites), by I. S. Astapovich and S. A. Kaplan, published by State Publishing House for Technical Literature, to be released in 10,000 copies the first quarter of 1958, is a brochure presenting basic information on the movement of artificial earth satellites, on conditions of their visibility, and on methods of visual observations of satellites. Methods of observation are described which make it possible to determine approximately the satellite orbit, to compute the instants of passage of a satellite at one or another geographic point, and to estimate the conditions of observation. Problems of organization and equipment of stations for conducting visual observations and methods of such observations are considered. Certain recommendations are given on the use of stations for investigating telemeteors. The brochure is intended for observers at visual-optical observation stations and amateur astronomers. (Sovetskiye Knigi, No 166, 1957, p 28)

Zagadka ionosfery (Mystery of the Ionosphere), by F. I. Chestnov, published by State Publishing House for Technical Literature in a third edition of 100,000 copies, to be released in the first quarter of 1958, is a popular brochure discussing the upper layers of the atmosphere, the ionosphere and methods of studying it, and the effects of solar radiation on the state of the ionosphere. The author acquaints the reader with the phenomenon of northern lights, causes of the formation of magnetic storms, and what significance the ionosphere has for radio communications. The brochure also discusses the conduct of the IGY and those problems which will be solved by scientists of many countries of the world during the IGY. (Sovetskiye Knigi, No 166, 1957, p 28)

Rasskaz ob iskusstvennykh sputnikakh Zemli (Story of Artificial Earth Satellites), by V. I. Levantovskiy, published by the State Publishing House of Technical Literature in 50,000 copies, to be released in the first quarter of 1958, is a popular pamphlet telling about artificial earth satellites, how they move and why they do not fall to earth, how a

satellite-launching rocket is constructed and how such a launching is accomplished, and the instruments of an artificial satellite and their use now and in the future. As an example, Sputnik I clarifies various problems of movement of satellites and conditions of their observation. The problems of human beings living on manned satellites in the future is discussed.

In conclusion, the author acquaints readers with the prospects of cosmic flights in the near future and in the distant future. (Sovetskiye Knigi, No 169, 1957, p 34)

Korabli mezhplanetnykh prostranstv (Interplanetary Space Ships), by Yu. Kryuchkov, published by DOSAAF Publishing House in 50,000 copies, to be released the fourth quarter of 1957, is a pamphlet presenting the structure of rockets, fundamentals of their flight, and use of rockets for scientific research and for interplanetary flight. (Sovetskiye Knigi, No 164, 1957, p 20)

Iskusstvennyye sputniki Zemli (Artificial Earth Satellites), by A. Shternfel'd, second revised and enlarged edition published by the State Publishing House for Technical Literature in 50,000 copies, to be released in the first quarter of 1958, is a revision and enlargement of the 179 pages of the first edition of the book and will discuss the following: laws of motion of artificial satellites and conditions of their visibility and observation; use of artificial satellites as observatories and laboratories, as well as interplanetary stations; problem of natural interplanetary stations; questions of launching an artificial satellite and its equipment; equipping an artificial satellite with measuring and control apparatus; problems connected with human physiology during flight in an orbital rocket and artificial satellite, as well as meteor danger; air conditioning and the use of solar energy on a satellite; problems of light signaling and radio signaling; alternation of day, night, and time of the year on an artificial satellite; movement of celestial bodies during observation from artificial satellites; economic and legal questions connected with the launching and operation of artificial satellites; lifetime of artificial satellites, etc. The problem of artificial satellites of other bodies of the Solar system is discussed briefly. A systematic review of achievements in this field in other countries is given. (Sovetskiye Knigi, No 164, 1957, p 26-27)

Dostizheniya nauki za 40 let izucheniye Sovetskoy Arktiki (Achievements of Science in 40 Years of Study of the Soviet Arctic), by Ya. Ya. Gakkel', published by the Publishing House of "Morskoy Transport" in 25,000 copies, to be released the last quarter of 1957, is a pamphlet which tells about the most important achievements of Soviet science in the study of the rigorous nature of the Arctic. In simple and clear style, the author, who was a participant in many expeditions, describes

the results of the study of hydrology, meteorology, and geology of the Arctic and speaks about the work of polar stations and its significance for the Soviet economy. The brochure is illustrated with photographs and sketches. (Sovetskiye Knigi, No 165, 1957, p 31)

Soviet Exhibits at UNESCO IGY Touring Exhibition in France

According to a 6 December 1957 Soviet newspaper source, the Soviet Union has a unique map showing distribution of its IGY stations on display at the UNESCO IGY exhibition which is touring Europe. The map is made of transparent plastic and is 10 square meters.

In addition to this map the Soviet Union will display an illuminated map of the Antarctic with its scientific stations where Soviet scientists are conducting investigations.

A number of other exhibits will show an instrument for studying solar radiation, a recording current meter used by oceanographers, a magnetic variation station, and others.

Numerous photographs reflecting the work of Soviet scientists and several charts by artist I. Ruban with views of the Arctic and Antarctic will be shown: "Ulitsa Lenin in Mirnyy," "Panorama of Drift Station SP-1'," "Summer Day at Pionerskaya," and others.

Visitors to the exhibition also will see Soviet popular science films "On the Shores of the Antarctic," "In the Land of Everlasting Ice," and "North Pole." (Moscow, Vechernyaya Moskva, 6 Dec 57)

II. ROCKETS AND ARTIFICIAL EARTH SATELLITES

Soviet Scientist Predicts Moon Flight in 1 1/2-2 Years

The latest issue of the periodical of the Soviet peace fighters publishes an article by Prof K. Stanyukovich entitled "Moon Flight Is Possible." The professor, a member of the Interdepartmental Commission on Interplanetary Travel, says that the first moon flight may take place in the next 1 1/2-2 years, or else the Moon may be circumnavigated.

Before the first rocket is sent to the Moon, it is probable that more artificial satellites will be launched, which will travel along an increasingly extended elliptical orbit, thus coming closer and closer to the moon and photographing its surface. (Budapest, Nepszabadsag, 18 Dec 57)

Pravda and Izvestiya Continue Publishing Satellite Ephemeris

According to Pravda, and Izvestiya, Sputnik II completed 1,394 revolutions around the Earth at 0600 on 9 February.

During clear weather, the TASS communique continues, Sputnik II may be seen with the naked eye at sunrise from 30° to 58° North latitude and from 29° to 64° South latitude.

On 10 February, the artificial satellite will pass southeast of Moscow at 0635 from southwest to northeast. (Moscow, Pravda and Izvestiya, 9 Feb 58)

Over 1,300 Soviet Citizens Volunteer as First Spacemen

According to Pravda, around 1,300 people from numerous professions have expressed their desire to be the first astronauts. N. D. Maklakov, a pilot, writes that he has the right to be one of the first explorers of the Cosmos because, during the war, he took part in air fighting against the fascist pilots and after the war flew a jet fighter and therefore knows a lot about aviation technique.

M. D. Kuz'menko from Khar'kov also feels that the first astronauts should have outstanding experience in flying. Kuz'menko has 1,000 hours of flying experience and asks that his services be used as a passenger in one of the future cosmic rockets.

The rest of the newspaper item cites communications from persons in France and Peru who are also desirous of being the first space travelers. (Moscow, Pravda, 19 Jan 58)

III. UPPER ATMOSPHERE

IGY Work in Kazakhstan Astrophysics Institute

A newspaper article by A. Vdovin, describes his visit to the observatory of the Astrophysics Institute of the Academy of Sciences Kazakh SSR, which is located on the Kamenskoye Plateau, some 1,500 meters above sea level.

The work of D. A. Rozhkovskiy, Candidate of Physicomathematical Sciences, on systematic observations of gas-dust nebulae using the meniscus telescope system designed by D. D. Maksutov is described. These observations are of significant value in supporting Academician V. G. Fesenkov's theory on the origin of stars.

Rozhkovskiy is quoted as saying that the comprehensive analysis of the observations conducted at the observatory conclusively confirm Fesenkov's brilliant concept of the origin of stars from particles of gas-dust nebulae.

A. V. Kharitonov, scientific secretary of the observatory, spoke about the existence of the star worlds farthest from the earth, which he has studied using the newest of astronomical instruments -- a double-refractor with a stellar electrophotometer. This instrument was designed by workers of the observatory. Kharitonov is the possessor of a unique collection of photographs of the most distant star worlds, greatly clarifying the problems of the origin and existence of planets, asteroids, and comets.

A vast amount of work is being done by the institute's personnel under the IGY program. Z. V. Koryakina, Candidate of Physicomathematical Sciences, is occupied with the study of auroral spectra. She is aided in this work by special light-sensitive spectrographs which make it possible to register polar lights even in such low latitudes as Alma-Ata.

M G. Karimov, deputy director for science, and a Candidate of Physico-mathematical Sciences, described the use of a powerful chromospheric telescope, a noneclipse coronagraph by means of which a peek into the secrets of such interesting solar phenomena as prominences, the solar corona and flares, originating from time to time in this colossal natural atomic reactor, may be had. The mystery of these secrets is of great value for the correct forecasting of night sky illuminations, the condition of the ionosphere, northern lights, magnetic storms, sea tides, etc.

Everyone at the institute is impatiently awaiting news from a group of Alma-Ata scientists and astrophysicists led by the Academician V. G. Fesenkov, director of the institute, on the way to Egypt. There the group will carry out observations of zodiacal light -- the remote region of luminescence of solar corona. (Alma-Ata, Kazakhstanskaya Pravda, 5 Dec 57)

IV. OCEANOGRAPHY

Vityaz' Mapping Ocean Depths

The Soviet oceanographic vessel Vityaz' carries photographic equipment which takes detailed pictures of the ocean floor. A single exposure encompasses an area of 3 square meters. By putting together a series of such photographs, the Soviets can make a detailed map of certain parts of the ocean floor.

The Vityaz' also carries instruments for measuring the speed of ocean currents. It has been found that the currents move most rapidly at the greatest depths and sometimes attain a speed of 10-12 centimeters per second. (Budapest, Technika, No 10, Dec 57, p 10)

V. ANTARCTIC

Port Louis Shuttle Point for Ships Returning Soviet Antarctic Workers

A. Vvedenskiy, Pravda's special correspondent aboard the Soviet ship Angara, reports the arrival of the Kooperatsiya, followed by the Angara, at Port Louis, Mauritius. The Kooperatsiya, carrying members of the Second Continental Antarctic Expedition homeward from Antarctica, is the first Soviet ship to enter this port since World War II. After a 4-day visit, during which the Soviets were warmly received by the island's inhabitants, the ships departed on 28 January. The Angara, to which the members of the expedition had transferred while in port, sailed for Egypt on its way home, while the Kooperatsiya began its return to Antarctica. (Moscow, Pravda, 2 Feb 58)

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